MY NEW PRINCIPLES OF THE CLASSIFICATION OF THE HUMAN RACE.

BY G. SERGI, ROME, ITALY.

THE chief principle consists in discovering many varieties in man, as in animal species. These varieties have internal and external characters: the former are persistent and fixed by heredity, and in man are durable for many centuries—according to my own observations, more than a thousand years. The external characters are liable to be changed by crossing the varieties. These characters, now, are very much mingled in various ways, so that it is not easy to distinguish one from another. These mingled characters are constant causes of mistakes in the classification of human beings.

The internal characters of the human varieties are in the bony frame, especially in the skull; the externals are the color of the skin and of the hair and eyes.

Until the human classification is made by external characters (Linneus, Cuvier, etc.), we cannot have one upon a natural basis. Very little experience of the various races of man, as now classified, shows that these are an intermixture of various ethnic elements, with the same or various colors of skin, hair and eyes. Elsewhere we find various colors of skin with the same internal characters of the skeleton.

The skull chiefly furnishes the characters of classification; it shows the external shape of the brain, the most important and the highest organ of man; the skull is the means of the classification of the brain.

Now, I have discovered in the human skulls various forms or types which are persistent by heredity; these forms, which we find in many individuals, are varieties of my primitive ideal form of skull in human beings. Again, I have discovered that the varieties comprehend subvarieties by means of some new characters which modify the variety, or are superadded to the characters of the variety.

Therefore, I consider the shape of the skull as a natural basis of the classification of the varieties of man, because the varieties have a dependence upon a biological fact, viz., the natural formation by variations, as in animal species.

The various forms of the human skull have their origin from a series of anatomical facts: (1) From the various development of the bones of the human skull. (2) From the different curves of the bones, and from the different directions of these curves. (3) From the capacity of the skull.

It is true that anthropologists have often spoken of type of skull, but they have not defined this type; we can show it by the works of the German anthropologists, especially of Von Hölder, Ecker, Virchow, and others, of the French and Swiss anthropologists, as His and Rütimeyer, De Quatrefages and others. The Italian anthropologist, Mantegazza, has proposed a Linnean description of human skulls.

But all the anthropologists believe they can determine the form of the skulls by the measurements and the correlated indices.

This method of measurement, which Retzins introduced in anthropology, was suggested by himself and by subsequent scholars. Retzins classified the human races by means of the cephalic index, which is one character of the skull; he changed his classification four times in a few years, because his method was uncertain.

In my opinion, the method of measurements adopted for this classification is no method. The measures only discover some secondary characters of the skull; I have proved that, under the same cephalic index, we have many different forms of skulls, and under various cephalic indices we have the same shape of the skull. Besides, the skulls of all people of the world are dolicho, meoo, and brachycephalic.

I think that Blumenbach laid the true basis of anthropology in his little book, *De generis humani varietate nativa*, a century ago. He found that the human varieties are numberless, and investigated very accurately the causes of the variations in man, as in animals. But subsequent anthropologists have left off the Blumenbach principles, which should have been the basis of systematic anthropology and of classification.

Now, my object is to establish the basis of systematic anthropology on the shape of the skulls, without regard to measurements. For this purpose it is necessary to find a nomenclature of those forms which correspond to the varieties and sub-varieties, as we have done in zoölogy. The nomenclature is intended to distinguish one form from another, and to fix definitively the forms of the different varieties. Further, the nomenclature applies to the geographical distribution of the varieties and serves to analyze the various ethnic elements which compose the peoples of the world. Thus we can follow the course of human emigration and of mixture in various times.

I have attempted, in many sketches, to show practically the results of my principles and of my new method of classification of varieties. These sketches are the following:

African and Armenian skulls: General considerations on anthropology and craniology. (Archivio per l'Antropologio, 1891). The human varieties in Melanesia (Academia de Medicina de Parma, 1892). The human varieties in Sicily (Acad. dei Lincei, Roma, 1892). The human varieties in Sicily. (Acad dei Lindei, Roma, 1892). The human varieties in Lower Russia (Anali de Medicina 1892). The primitive inhabitants of the Mediterranean Sea (not yet published). The microcephalic varieties and pygmies of Europe (Acad. di Medicina di Roma, 1893). Catalogue of the varieties of man in Russia. Systematic classification of the primitive inhabitants of European Russia.

LETTERS TO THE EDITOR.

***Correspondents are requested to be as brief as possible. The writer's name is in all cases required as a proof of good faith.

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

THE MECHANICS OF FLIGHT.

AT the recent Aërial Navigation Congress in Chicago a paper was read on this subject which was published in *Engineering News* for Oct. 12. The paper has caused a great deal of discussion, which has appeared in the same journal for Oct. 26 and Nov. 16. I think it will be of interest to readers of *Science*, who may not have access to this paper, to give a few points in these novel views and to show how valueless they are in explaining the perplexing problem of the soaring bird.

The author has made a careful study of the flight of buzzards in tropical regions, and assumes, as a premise, that because he has not seen the bird move its wings, or any portion of them, therefore it must gain some assistance from air currents. It seems to me this is a violent assumption at the outset; surely our eyes at a distance cannot give us movements of wings which might be ample to keep the bird at a level, or it may be that the bird does not continue absolutely at the same level, though appearing to the eye to do so. At all events, this premise should not be granted, and should be proved by evidence far better than any thus far adduced.

The author thinks that the bird in flying with a current and down an inclined plain will gain energy from the current over and above that due to the descent, and this

gain will enable the bird to turn and mount to a much higher plane than it formerly occupied. On the face of it I think this must strike every reader as extremely improbable and almost nonsensical. The opinion is strengthened as we continue on in the original discussion. Suppose a bird to be soaring at a speed of twenty miles per hour in a current which is itself moving at the same rate. It is very evident that this velocity must have been attained by the bird with almost no assistance from the air current, for the resistance of the air against the soaring bird it practically nothing. It is also evident that, if the bird continues soaring in this current, it must lose the velocity it had attained, and very quickly fall if not assisted in some way. If it descends in an inclined plane, its velocity, so far as the current of air goes, will not be changed in the least, for two reasons. First, it has the same velocity as the air current at starting on its downward path, and hence the air current could not accelerate it any more than if it had continued soaring in a horizontal plane. Second, as just suggested, the resistance of the air is practically nothing, so that the current will have no effect. The assumption that there is some occult assistance given to the bird, because it is going down an inclined plane instead of horizontally, will not be regarded as of any value by any one at all familiar with the simplest principles of mechanics.

But this is not all: an attempt is made to prove this occult assistance from a concrete example. The author takes a ship moving at twenty miles per hour and places upon it an inclined plane, whose vertical height is 13.38 feet, which is the distance through which an object must fall to attain a velocity of twenty miles per hour. Now, if a ball should be allowed to roll down this inclined plane, it would attain, so it is assumed, a velocity of forty miles per hour with respect to the water outside of the ship neglecting friction on the plane. This velocity of forty miles per hour is made up, as the author states, of the twenty miles per hour due to the motion of the ship or the initial velocity, and twenty miles per hour additional due to the acceleration from the fall of 13.38 feet in the descent of the ball on the inclined plane. It is perfectly plain that there is no occult effect coming in so far from the motion of the ship. The author shows that with a velocity of forty miles per hour, if the ball should roll upon an inclined plane fixed off the ship, it would rise to a point more than twenty-six feet higher than the starting point. This conclusion is quite startling, and shows a most serious fallacy in the reasoning. If the ball had rolled up an inclined plane fixed to the ship, it would have risen to exactly the same height as at starting, as was clearly shown by Prof. J. P. Church. That the ball would not rise to any such height will be clearly seen by considering what would happen if it rolled from its first position upon an inclined plane fixed upon the water. In this case it would rise exactly 13.38 feet, and its motion would cease altogether.

The vicious reasoning is brought out very clearly even in the original paper, for the author considers what would happen if the ball fell vertically instead of rolling down the inclined plane. In this case the twenty miles per hour initial velocity he considers as equivalent to a fall of 13.38 feet, and as the inclined plane is 13.38 feet high, the total fall would be equivalent to 26.76 feet, and he shows that with this fall the velocity attained would be 28.28 miles per hour. That is to say, a ball rolling down an inclined plane, where it must meet with a slight resistance, will attain an accelerated velocity of twenty miles per hour due to the fall of 13.38 feet; but, when the same ball falls vertically in free air, and where it meets with no resistance, its acceleration is only 8.28 miles per hour. I am sure nothing farther is needed to show the utter fallacy of all this reasoning. H. A. HAZEN.

Nov. 21.

PORTRAITS OF HELMHOLTZ.

I THINK it will be of interest to the many admirers of the distinguished physicist, Von Helmholtz, to know that on his recent visit to this country he was induced to sit for a photograph in the gallery of the well-known artist, Mr. Brady, of Washington.

Some most excellent pictures were obtained, copies of which may be obtained by addressing Mr. M. B. Brady, photographer, Washington, D. C.

The prices are: For the largest size, 9x14, $2.00; intermediate, 8x10, $1.00; cabinet, 25 cents.

The cabinet size and the others (*unmounted*) will be sent by mail. The larger sizes (mounted) must be sent by express, at the expense of the purchaser—usually 25 to 35 cents. T. C. MENDENHALL.

Washington, D. C., Nov. 7.

SONGS OF BIRDS.

HAD I not expected that we should have more satisfactory answers to the query as to whether the voices of birds expressed emotion or not, I should have ventured a word before now.

I think any student or observer of birds, who has carefully noted them with his heart in the study, will agree with me when I say that if there is such a thing as expression of emotion in voice, then bird voices most clearly express it. The mere fact that a bird soon forgot his loss and grief, and sang in the natural bouyancy of his spirits, or that another, lame and confined, was yet happy, and expressed his happiness in his song, certainly does not prove lack of emotional expression in the voices of birds.

The untrained ear may fail to detect the difference in the joyful and sorrowful notes of some birds, but surely the ear must be indifferent, indeed, that does not detect plain expression of sentiment or of joy in the happy song, or of sorrow in the disturbed wail of any of the common birds about our doors.

The gift of voice was unquestionably intended as a means of expression to all creatures thus endowed, and wherever our powers of comprehension enable us to hear and understand them aright, we cannot fail to detect expression in them.

This may seem a trivial matter to bring up at this time, but it seems hardly fair that we should pass over the matter without giving to birds and all other creatures their just dues. B. S. BOWDISH.

Phelps, N. Y., Nov. 1, 1893.

DICTIONARY OF SCIENTIFIC NAMES.

THROUGH your query column, permit me to ask if there has ever been published a pronouncing dictionary of scientific names in use in the study of natural science for the benefit of the young student who does not care to delve too deeply into the study of Latin, and if not, why would not such a publication be a welcome addition to our library? B. S. BOWDISH.

Phelps, N. Y., Nov. 9, 1893.

ORIGIN OF THE CARVINGS AND DESIGNS OF THE ALASKANS AND VANCOUVRE INDIANS.

A FEW years ago I crossed the ocean on a slow steamer in company with a returning missionary, who had spent fourteen years among the Vancouvre Indians. He had with him a large collection of carved implements and *fac simile* drawings of the quaint figures on their boats and other objects. His opinion was that they were Japanese in design; that at some time some people from that country had been blown across the Pacific, and left there traces of their arts, which were perpetuated. He thought there were some traditions among the Indians that pointed that way also.

In looking over the collections at the Exposition this